



CMS0173.TXT
SEQUENCE LISTING

<110> Doorbar, John

<120> IMPROVEMENTS IN OR RELATING TO SCREENING FOR PAPILLOMA
VIRUSES

<130> 18396/1074

<140> 10/008,524

<141> 2001-11-05

<150> 09/314,268

<151> 1999-05-18

<160> 179

<170> PatentIn Ver. 2.1

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<212> DNA

<213> Human papillomavirus type 16

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Lys Glu Ala Gln Ser Glu Lys Glu Glu Ala Pro Lys Pro Leu His Lys
          35          40          45
Val Val Val Cys Val Ser Lys Lys Leu Ser Lys Lys Gln Ser Glu Leu
          50          55          60
Asn Gly Ile Ala Ala Ser Leu Gly Ala Asp Tyr Arg Trp Ser Phe Asp
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 35 40 45
 Gln Ile Glu Ala Tyr Ser Leu Ala Leu Gln Gly Arg Asp Ile Ile Gly
 50 55 60
 Leu Ala Glu Thr Gly Ser Gly Lys Thr Gly Ala Phe Ala Leu Pro Ile
 65 70 75 80
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 85 90 95
 Thr Pro Thr Arg Ser Trp Pro Phe Arg Ser Gln Ser Ser Leu Lys Pro
 100 105 110
 Trp Ser Ser Ile Gly Val Gln Ser Ala Val Ile Val Gly Gly Ile Asp
 115 120 125
 Ser Met Ser Gln Ser Leu Ala Leu Ala Lys Lys Pro His Ile Ile Ile
 130 135 140
 Ala Thr Pro Gly Arg Leu Ile Asp His Leu Glu Asn Thr Lys Gly Phe
 145 150 155 160
 Asn Leu Arg Ala Leu Lys Tyr Leu Val Met Asp Glu Ala Asp Arg Ile
 165 170 175
 Leu Asn Met Asp Phe Glu Thr Glu Val Asp Lys Ile Leu Lys Val Ile
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 Pro Arg Asp Arg Lys Thr Phe Leu Phe Ser Ala Thr Met Thr Lys Lys
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 Val Gln Lys Leu Gln Arg Ala Ala Leu Lys Asn Pro Val Lys Cys Ala
 210 215 220
 Val Ser Ser Lys Tyr Gln Thr Val Glu Lys Leu Gln Gln Tyr Tyr Ile
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 Phe Ile Pro Ser Lys Phe Lys Asp Thr Tyr Leu Val Tyr Ile Leu Asn
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290

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Lys Ala Lys Ala Arg Ser Ile Leu Leu Ala Thr Asp Val Ala Ser Arg
305 310 315 320
Gly Leu Asp Ile Pro His Val Asp Val Val Val Asn Phe Asp Ile Pro
325 330 335
Thr His Ser Lys Asp Tyr Ile His Arg Val Gly Arg Thr Ala Arg Ala
340 345 350
Gly Arg Ser Gly Lys Ala Ile Thr Phe Val Thr Gln Tyr Asp Val Glu
355 360 365
Leu Phe Gln Arg Ile Glu His Leu Ile Gly Lys Lys Leu Pro Gly Phe
370 375 380
Pro Thr Gln Asp Asp Glu Val Met Met Leu Thr Glu Arg Val Ala Glu
385 390 395 400
Ala Gln Arg Phe Ala Arg Met Glu Leu Arg Glu His Gly Glu Lys Lys
405 410 415
Lys Arg Ser Arg Glu Asp Ala Gly Asp Asn Asp Asp Thr Arg Gly Cys
420 425 430
Tyr Val Cys Gln Glu Gln Gly Gly Trp Arg Lys Asn Glu Glu Ala Glu
435 440 445
Arg Pro Leu Ile Thr Phe Met Lys Ala Arg Val Leu Leu Phe Cys Lys
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<213> Human papillomavirus type 16

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octapeptide antigen

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<210> 80

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Leu Thr Val Ile Val Thr Leu His
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<210> 89

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<210> 90

<211> 92

<212> PRT

<213> Human papillomavirus type 16

<400> 90

Met Ala Asp Pro Ala Ala Ala Thr Lys Tyr Pro Leu Leu Lys Leu Leu
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20 25 30

Pro Trp Ala Pro Lys Lys His Arg Arg Leu Ser Ser Asp Gln Asp Gln

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Thr Gln Trp Thr Val Leu Gln Ser Ser Leu His Leu Thr Ala His Thr
 65 70 75 80

Lys Asp Gly Leu Thr Val Ile Val Thr Leu His Pro
 85 90

<210> 91

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<212> PRT

<213> Human papillomavirus

<400> 91

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Thr Pro Thr Thr Gln Pro Tyr Pro Arg Val Thr Pro Pro Ser Asn Arg
 20 25 30

Arg Pro Ser Thr Thr Pro Asn Ser Gln Asp Arg Gly Arg Pro Arg Arg
 35 40 45

Ser Asp Lys Asp Ser Arg Lys His Leu Tyr Ala Asp Gly Leu Thr Asp
 50 55 60

Gly Glu Asp Pro Glu Val Pro Glu Val Glu Asp Glu Glu Lys Glu Asn
 65 70 75 80

Gln Arg Pro Leu Gly His Pro Asp Leu Ser Leu Leu Arg Glu Thr Leu
 85 90 95

Glu Val Tyr Thr Gln Arg Leu Lys Arg Asp Ile Leu Gln Gln Asp Leu
 100 105 110

Asp Asp Phe Cys Arg Lys Leu Gly Ile His Pro Trp Ser Val
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 Consensus Amino Acid Sequence

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Thr Pro Thr Pro Pro Pro Arg Pro Pro Pro Pro Pro Pro Pro Arg
 20 25 30

Pro Trp Ala Gly Pro Lys Lys Pro Thr Arg Gly Pro Pro Arg Arg Arg
 35 40 45

Arg Leu Glu Ser Asp Ser Asp Asp Ser Gly Glu Val Glu Pro Thr Pro
 50 55

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Trp Thr Val Gln Thr Leu Leu Ser Ser Val Thr Leu Thr Trp Glu Tyr
85 90 95

Thr Phe Asp Gly Leu Val Val Ile Val Gln Asp Leu Glu Asp Tyr Trp
100 105 110

Lys Lys Leu His Leu
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20 25 30

Gly Glu Val Glu Gly Pro Thr Pro Thr Thr Pro Pro Ala Pro Pro Thr
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Gly

<210> 94

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<213> Human papillomavirus type 54

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His His Val Pro Thr Thr Pro Gln Lys Gln Ser Arg Ala Arg Arg Arg
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Pro Gln Thr
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<212> PRT

<213> Human papillomavirus type 32

<400> 95

Pro Ser Gln Gly Val Thr Ala Thr Thr Ala Gln Thr Glu Tyr Tyr Thr
1 5 10 15

<210> 96
 <211> 50
 <212> PRT
 <213> Human papillomavirus type 42

<400> 96
 Pro Leu Thr Thr Thr Thr Gln Thr Val Gln Thr Glu Gln His Thr Thr
 1 5 10 15
 Cys Pro Ser Lys Pro His Arg His Glu Asn Asp Thr Asp Ser Val Asp
 20 25 30
 Ser Arg His His Ser Thr Cys Ser Thr Gln Thr Pro Ala Ser Pro Ala
 35 40 45
 Ser Pro
 50

<210> 97
 <211> 47
 <212> PRT
 <213> Human papillomavirus type 3

<400> 97
 Lys Pro Arg Trp Ala Arg Pro Lys Asp Arg Ser Lys Ser Asp Ser Asp
 1 5 10 15
 Ser Arg Arg Ser Thr Gly Ser Ser Ser Ser Asn Ser Ser Ser Asn Ser
 20 25 30
 Asn Ser Asn Asn Ile Pro Lys Pro Pro Pro Arg Lys Pro Leu Asn
 35 40 45

<210> 98
 <211> 39
 <212> PRT
 <213> Human papillomavirus type 28

<400> 98
 Lys Pro Arg Trp Ala Arg Pro Lys Asp Arg Ser Lys Asn Asp Ser Asp
 1 5 10 15
 Ser Arg His Ser Thr Gly Ser Ser Ser Ser Asp Ser Thr Pro Lys Pro
 20 25 30
 Pro Pro Arg Lys Pro Leu Asn
 35

<210> 99
 <211> 40
 <212> PRT

1 5 15
Ser Arg Arg Ser Thr Asp Ser Thr Ser Ser Ser Asp Lys Gly Pro Lys
20 25 30
Ile Pro Pro Arg Arg Pro Arg Asn
35 40

<210> 100
<211> 51
<212> PRT
<213> Human papillomavirus type 29

<400> 100
Lys Pro Arg Trp Gly Leu Arg Arg Asp Arg Asn Gly Asn Asp Ala Gly
1 5 10 15
Leu Lys Gln Ser Gly Leu Gly His Ser Ser Ser Ser Ser Ser Thr
20 25 30
Ser Ser Ser Ser Ser Asn Arg Pro Arg Pro Thr Pro Pro Arg Lys
35 40 45
Pro Val His
50

<210> 101
<211> 41
<212> PRT
<213> Human papillomavirus type 61

<400> 101
Pro Pro Arg Ala Trp Ala Pro Pro Arg His Pro Pro Arg Cys Arg Arg
1 5 10 15
Arg Leu Ile Ser Asp Ser Asp Ser Thr Glu Thr Glu Ser Ser Ser Pro
20 25 30
Thr Gln His Lys Lys Thr Thr Thr Ser
35 40

<210> 102
<211> 45
<212> PRT
<213> Human papillomavirus type 2a

<400> 102
Gln Glu Glu Gln Leu Arg Pro Pro Lys Arg Cys Ala Pro Pro Arg Arg
1 5 10 15
Gln Arg Val Arg Arg Pro Ser Ala Ser Val Ser Ser Ser Asp Ser Ser
20 25 30
Ile Pro Gly Pro Thr Leu Arg Glu Arg Ser Glu Arg Gly
35 40 45

<213> Human papillomavirus type 27

<400> 103

Glu Gln Glu Gln Leu Arg Pro Gln Thr Cys Cys Ala Pro Pro Arg Arg
 1 5 10 15
 His Arg Val Arg Arg Pro Ser Ala Ser Gly Ser Ser Ser Asp Ser Ser
 20 25 30
 Ile Ser Gly Pro Thr Leu Arg Glu Arg Ser Glu Arg Gly
 35 40 45

<210> 104

<211> 41

<212> PRT

<213> Human papillomavirus type 57

<400> 104

Gln Ser Arg Pro His Ser Arg Thr Pro Pro Arg Arg His Arg Val Arg
 1 5 10 15
 His Pro Ser Ala Ser Gly Ser Ser Ser Asp Ser Ser Gly Asn Ser Pro
 20 25 30
 Thr Leu Arg Gly Arg Ser Glu Lys Gly
 35 40

<210> 105

<211> 39

<212> PRT

<213> Human papillomavirus type 26

<400> 105

Pro Thr Cys Pro Trp Ala Pro Arg Lys Pro Arg Arg His Thr Gln Glu
 1 5 10 15
 Ser Asp Asp Asp Ser Val Asp Leu Thr Pro Pro Ser Pro Gln Ser Pro
 20 25 30
 Leu Ser Pro Gln Leu Pro His
 35

<210> 106

<211> 40

<212> PRT

<213> Human papillomavirus type 30

<400> 106

Pro Pro Arg Pro Trp Ala Pro Thr Lys Pro Arg Pro Pro His Gly Arg
 1 5 10 15
 Glu Asn Val Leu Glu Pro Gln Ser Pro Thr Val Gln Thr Pro Pro Asp
 20 25 30
 Ser Pro Leu Pro Glu Ser Pro Thr
 35

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<212> PRT

<213> Human papillomavirus type 53

<400> 107

Pro	Pro	Arg	Pro	Trp	Ala	Pro	Thr	Lys	Pro	His	His	Pro	Cys	Gly	Arg
1				5					10					15	

Glu	Asn	Val	Pro	Glu	Pro	Gln	Ser	Pro	Thr	Val	Leu	Thr	Pro	Pro	His
			20					25					30		

Ser	Pro	Leu	Pro	Gln	Pro	Glu	Ser
		35				40	

<210> 108

<211> 39

<212> PRT

<213> Human papillomavirus type 56

<400> 108

Pro	Pro	Pro	Arg	Pro	Trp	Ala	Thr	Lys	Thr	Pro	Gln	Tyr	Pro	Thr	Asp
1				5					10					15	

Gln	Glu	Asn	Asp	Pro	Asp	Tyr	Gly	Asn	Gln	Asn	Leu	Thr	Pro	Pro	Glu
			20					25					30		

Ser	Pro	Thr	Gln	Ser	Val	Ser
			35			

<210> 109

<211> 37

<212> PRT

<213> Human papillomavirus type 66

<400> 109

Pro	Pro	Leu	Trp	Ala	Pro	Lys	Thr	Pro	Arg	Tyr	Pro	Thr	Asp	Gln	Glu
1				5					10					15	

Asn	Asp	Pro	Glu	Gln	Val	Asn	Gln	Asn	Leu	Thr	Pro	Pro	Glu	Ser	Pro
			20					25					30		

Thr	His	Thr	Val	Ser
			35	

<210> 110

<211> 29

<212> PRT

<213> Human papillomavirus type 18

<400> 110

Ala	Pro	Cys	Pro	Trp	Ala	Pro	Gln	Arg	Pro	Thr	Ala	Arg	Arg	Arg	Leu
1				5					10					15	

Leu	His	Asp	Leu	Asp	Thr	Val	Asp	Ser	Arg	Arg	Ser	Ser
			20					25				

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<400> 111
 Lys Pro His Pro Trp Ala Pro Gln Asn Pro Thr Ser Arg Arg Arg Leu
 1 5 10 15
 Leu Ser Asp Leu Asp Ser Val Asp Ser Gln Ser Ser Thr Thr Asp
 20 25 30

<210> 112
 <211> 32
 <212> PRT
 <213> Human papillomavirus type 39

<400> 112
 Pro Gln Gln Pro His Ala Pro Lys Lys Gln Ser Arg Arg Arg Leu Glu
 1 5 10 15
 Ser Asp Leu Asp Ser Val Gln Ser Gln Ser Pro Leu Ser Pro Thr Glu
 20 25 30

<210> 113
 <211> 27
 <212> PRT
 <213> Human papillomavirus type 70

<400> 113
 Pro Gln Gln Pro His Ala Pro Lys Lys Leu Ser Arg Arg Arg Leu Ala
 1 5 10 15
 Ser Val Glu Ser Pro Asp Pro Gln Lys Gln Thr
 20 25

<210> 114
 <211> 32
 <212> PRT
 <213> Human papillomavirus type 59

<400> 114
 Lys Pro Arg Thr Trp Ala Pro Lys Arg Gly Thr Val Arg Arg Arg Leu
 1 5 10 15
 Glu Ser Asp Gln Asp Ser Val Asp Thr His Ser Thr Leu Ser Leu Pro
 20 25 30

<210> 115
 <211> 46
 <212> PRT
 <213> Human papillomavirus type 7

CMS0173.TXT

Arg Pro Pro Lys Tyr Thr Thr Thr Ala Thr His Arg Pro Glu Ser Glu
20 25 30

Gly Glu Thr Glu Thr Cys Pro Ser Val Gln Trp Thr Asp Val
35 40 45

<210> 116
<211> 41
<212> PRT
<213> Human papillomavirus type 40

<400> 116
Pro Thr Pro Pro Thr Pro Pro Gln Arg Pro Pro Lys Arg Ser Ala
1 5 10 15
Pro Pro Arg His Arg Pro Glu Ser Asp Glu Glu Thr Asp Thr Cys Pro
20 25 30
Ser Pro Leu Leu Trp Ala Asn His Ser
35 40

<210> 117
<211> 35
<212> PRT
<213> Human papillomavirus type 16
<400> 117
Lys Pro Ser Pro Trp Ala Pro Lys Lys His Arg Arg Leu Ser Ser Asp
1 5 10 15
Gln Asp Gln Ser Gln Thr Pro Glu Thr Pro Ala Thr Pro Leu Ser Cys
20 25 30
Cys Thr Glu
35

<210> 118
<211> 34
<212> PRT
<213> Human papillomavirus type 35
<400> 118
Lys Pro Ala Pro Trp Ala Pro Gln Lys Pro Arg Arg Gln Ile Thr Asn
1 5 10 15
Asp Phe Glu Gly Val Pro Ser Ser Pro Thr Thr Pro Pro Ser Glu Cys
20 25 30
Asp Ser

<210> 119
<211> 39
<212> PRT
<213> Human papillomavirus type 11

CMS0173.TXT

Leu Leu Ser Asp Gln Glu Gln Ser Gln Ser Thr Glu Thr Pro Thr Thr
 20 25 30

Pro Thr Ser Cys Cys Glu Ala
 35

<210> 120
 <211> 38
 <212> PRT
 <213> Human papillomavirus type 52

<400> 120
 Pro Gln Cys Pro Trp Val Pro Lys Thr His Thr Tyr Asn His His Arg
 1 5 10 15

Asn Asp Asp Asp Gln Thr Ser Gln Thr Pro Glu Thr Pro Ser Thr Pro
 20 25 30

Thr Thr Phe Cys Gly Asp
 35

<210> 121
 <211> 26
 <212> PRT
 <213> Human papillomavirus type 33

<400> 121
 His His Lys Gln Arg Pro Asn Asp Asp Asp Leu Gln Thr Pro Gln Thr
 1 5 10 15

Pro Pro Ser Pro Leu Gln Ser Cys Ser Val
 20 25

<210> 122
 <211> 32
 <212> PRT
 <213> Human papillomavirus type 58

<400> 122
 Pro Thr Thr Lys Val His Arg Gly Gln Ser Asp Asp Asp Ser Ile Tyr
 1 5 10 15

Gln Thr Pro Glu Thr Thr Pro Ser Thr Pro Gln Ser Ile Gln Thr Ala
 20 25 30

<210> 123
 <211> 29
 <212> PRT
 <213> rhesus monkey papillomavirus

20

25

<210> 124
 <211> 36
 <212> PRT
 <213> Human papillomavirus type 66

<400> 124
 Pro Leu Cys Pro Gln Ala Pro Arg Lys Thr Gln Cys Lys Arg Arg Leu
 1 5 10 15
 Gly Asn Glu His Glu Glu Ser Asn Ser Pro Leu Ala Thr Pro Cys Val
 20 25 30
 Trp Pro Thr Leu
 35

<210> 125
 <211> 34
 <212> PRT
 <213> Human papillomavirus type 11

<400> 125
 Leu Gln Cys Pro Pro Ala Pro Arg Lys Thr Ala Cys Arg Arg Arg Leu
 1 5 10 15
 Gly Ser Glu His Val Asp Arg Pro Leu Thr Thr Pro Cys Val Trp Pro
 20 25 30
 Thr Ser

<210> 126
 <211> 40
 <212> PRT
 <213> Human papillomavirus type 44

<400> 126
 His Arg Pro His Pro His Cys Pro Leu Ala Pro Pro Arg Thr Ala Trp
 1 5 10 15
 Thr Arg Arg His Val Asn Asp Pro Glu Asp Pro Pro Gln Thr Pro Thr
 20 25 30
 Thr Pro Glu Thr Pro Ser Val Ser
 35 40

<210> 127
 <211> 40
 <212> PRT
 <213> Human papillomavirus type 55

<400> 127
 His Arg Pro His Leu His Cys Pro Pro Ala Pro Pro Arg Asn Ala Trp
 1 5 10 15 20 25 30 35 40 45 50

Thr Pro Gly Thr Pro Ser Val Ser
 35 40

<210> 128
 <211> 39
 <212> PRT
 <213> Human papillomavirus type 13

<400> 128
 Pro Gln Cys Pro Ala Ala Pro Arg Lys Asn Val Cys Lys Arg Arg Leu
 1 5 10 15
 Val Asn Asp Asn Glu Asp Leu His Val Pro Leu Glu Thr Pro Arg Thr
 20 25 30

His Lys Ala Leu Cys Val Ser
 35

<210> 129
 <211> 40
 <212> PRT
 <213> Pygmy chimpanzee papillomavirus

<400> 129
 Ala Gln Cys His Pro Ser Pro Gln Lys Ile Val Cys Lys Lys Arg Arg
 1 5 10 15
 Pro Ile Asn Asp Phe Glu Asp Pro Pro Thr Val Leu Glu Asn Ser Lys
 20 25 30

Thr Pro Leu Thr Leu Cys Val Pro
 35 40

<210> 130
 <211> 22
 <212> PRT
 <213> Human papillomavirus type 34

<400> 130
 Ala Thr His Arg Thr Arg Val Cys Gln His Gly Asn Gly Ile Asp Ser
 1 5 10 15
 Val Thr Gln Thr Arg Gly
 20

<210> 131
 <211> 71
 <212> PRT
 <213> Human papillomavirus type 19

<400> 131
 Gly Thr Arg Asp Asp Leu Pro Ala Gly Pro Asp Asp Lys Pro Lys Arg
 1 5 10 15

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Arg Pro Pro Pro Leu Glu Gly Glu Val Glu Gly His Pro Pro Pro Pro
50 55 60

Val Thr Asn Pro Pro Gly His
65 70

<210> 132

<211> 95

<212> PRT

<213> Human papillomavirus type 25

<400> 132

Pro Pro Ala Gly His Asp Asp Ser Lys Pro Lys Arg Ala Arg Gly Asp
1 5 10 15

Gln Gly Pro Ser Pro Gly Pro Gly Pro Ser Pro Ala Pro Val Ser Asp
20 25 30

Arg Gly Arg Gly Arg Gly Arg Gly Leu Asn Leu Ser Arg Leu Ser Gly
35 40 45

Asp Gln Asp Pro Asp Pro Glu Glu Lys Pro Gln Pro Glu Gly Glu Val
50 55 60

Gln Gly His Pro Gln Pro Pro Pro Val Thr Glu Pro Gln Gly His Leu
65 70 75 80

Pro Pro Pro Pro Leu Pro Pro Pro Asn Gly His Asn Asp Arg Asp
85 90 95

<210> 133

<211> 99

<212> PRT

<213> Human papillomavirus type 20

<400> 133

Gly Thr Asp Gly Asp Leu Pro Val Gly Gln Gly Glu Gln Pro Lys Arg
1 5 10 15

Ala Arg Gly Asp Gly Pro Gly Gln Ser Pro Ser Pro Ser Pro Gly Arg
20 25 30

Gly Arg Gly Arg Gly Thr Gly Leu Gly Leu Gly Leu Gly Leu Asn Arg
35 40 45

Arg Ala Gly Gly Leu Gly Thr Asp His Asp Pro Asp Pro Glu Gly Glu
50 55 60

Ser Pro Ser Ala Pro Leu Pro Pro Pro Pro Gln Pro Pro Pro Asp Gly
65 70 75 80

Gln Val Glu Gly His Pro Pro Pro Pro Pro Pro Pro Pro His Asn Gly
85 90 95

Arg Asp Ser

CMS0173.TXT

<212> PRT

<213> Human papillomavirus type 21

<400> 134

Gly Thr Asp Gly Asp Arg Pro Val Gly Pro Gly Glu Arg Pro Lys Arg
 1 5 10 15
 Ile Lys Gly Gly Asp Arg Gly Pro Ser Pro Gly Arg Gly Arg Gly Arg
 20 25 30
 Gly Arg Gly Ser Asp Pro Asp Pro Gly Pro Asp Pro Gly Pro Ile Pro
 35 40 45
 Gly Pro Gly Leu Asn Arg Leu Thr Ser Arg Asn Thr Asp Ser Asp Pro
 50 55 60
 Glu Gly Lys Cys Pro Ser Ser Leu Pro Pro Pro Pro Pro Pro Pro
 65 70 75 80
 Gln Pro Thr Thr Pro Pro Glu Gly Gln Gly Glu Gly His Pro Pro Pro
 85 90 95
 Pro Pro Pro Pro Pro Asn Gly His Asp Gly
 100 105

<210> 135

<211> 88

<212> PRT

<213> Human papillomavirus type 14

<400> 135

Glu Gly Thr Asp Ala Asp Arg Pro Val Gly Pro Gly Glu Arg Pro Lys
 1 5 10 15
 Arg Gly Arg Gly Gly Asp Arg Gly Pro Ser Pro Gly Arg Gly Arg Gly
 20 25 30
 Arg Gly Leu Gly Ser Asp Leu Asp Pro Gly Arg Asn Arg Leu Ser Gly
 35 40 45
 Gly Leu Gly Thr Asp Gln Asp Pro Asp Pro Asp Lys Lys Lys Cys Pro
 50 55 60
 Glu Ser Gln Pro Pro Pro Glu Gly Glu Val Glu Gly His Pro Pro Pro
 65 70 75 80
 Pro Pro Asn Gly His Asn Gly His
 85

<210> 136

<211> 90

<212> PRT

<213> Human papillomavirus type 5

<400> 136

Ser Gln Gly Asp Arg Lys Arg Ser Lys Gly Asp Gln Gly Pro Asp Thr

CMS0173.TXT

Leu Gly Pro Pro Pro Gly Pro Gly Pro Arg Arg Ser Pro Arg Leu Gly
 35 40 45
 Pro Leu Gln Ala Asp Arg Asp Pro Glu Glu Gly Pro Gln Pro Pro Ala
 50 55 60
 Glu Gly Glu Val Glu Gly His Pro Gly Gly Asp Gln Gly His Pro Pro
 65 70 75 80
 Pro Pro Pro Pro Ala Pro His Asn Gly His
 85 90

<210> 137
 <211> 87
 <212> PRT
 <213> Human papillomavirus type 36

<400> 137
 Gly Gln Gly Asp Arg Lys Arg Ser Lys Gly Asp Gln Gly Pro Asp Thr
 1 5 10 15
 Asp Pro Leu Gly Pro Asp Arg Gly Pro Ser Pro Gly Pro Thr Pro Gln
 20 25 30
 Pro Leu Gly Leu Pro Pro Pro Gly Leu Gly Pro Arg Arg Ser Pro Arg
 35 40 45
 Leu Gly Ser Ser Gly Tyr Gln Pro Asp His Asp Pro Glu Ala Pro Leu
 50 55 60
 Glu Gly Glu Val Glu Gly Gly Gly His Gly His His Pro Pro Pro Pro
 65 70 75 80
 Pro Pro Pro Pro Pro Thr Asn
 85

<210> 138
 <211> 87
 <212> PRT
 <213> Human papillomavirus type 47

<400> 138
 Gln Gly Asp Arg Lys Arg Thr Lys Gly Asp Pro Asp Pro Asp Pro Gly
 1 5 10 15
 Arg Gly Pro Val Leu Lys Pro Thr Leu Pro Pro Pro Pro Pro Pro Pro
 20 25 30
 Pro Thr Gly Pro Gly Leu Arg Arg Ser Thr Arg Leu Val Leu Val Pro
 35 40 45
 Gly Gln Gly Pro Pro Pro Asp Leu Pro Ala Pro Pro Val Glu Gly Glu
 50 55 60
 Val Glu Gly His Pro Gln Gly Lys Asp Arg Asp His Pro Pro Pro Thr
 65 70 75 80

CMS0173.TXT

<210> 139

<211> 76

<212> PRT

<213> Human papillomavirus type 12

<400> 139

Gly Asp Arg Lys Arg Ser Lys Gly Asp Gln Gly Arg Asp Thr Ala Pro
 1 5 10 15
 Ser Leu Thr Pro Gly Arg Ala Pro Ser Pro Lys Pro Gly Pro Leu Ala
 20 25 30
 Pro Pro Pro Tyr Pro Gly Pro Pro Gly Pro Arg Arg Ser His Arg Leu
 35 40 45
 Gly Thr Gly Gly Arg Asp Arg Asn Pro Glu Glu Gly Gly Val Glu Gly
 50 55 60
 His Pro Pro Thr Pro Pro Leu Ser Gly Gly Asp Pro
 65 70 75

<210> 140

<211> 91

<212> PRT

<213> Human papillomavirus type 8

<400> 140

Gln Asp Arg Lys Lys Ser Arg Gly Asp Gln Gly Arg Asp Thr Ala Pro
 1 5 10 15
 Gly Leu Ala Pro Gly Arg Ser Pro Gly Leu Gly Pro Leu Ala Pro Pro
 20 25 30
 Pro Tyr Pro Gly Pro Gly Pro Arg Arg Ser Pro Arg Gln Phe Gly Pro
 35 40 45
 Gly Pro Asp Arg Asp Pro Glu Asp Gly Leu Gln Pro Pro Leu Gly Glu
 50 55 60
 Gly Gln Val Glu Gly His Pro Gly Asp Gly Asp Gln Pro Gln Gly His
 65 70 75 80
 Pro Pro Pro Thr Pro Ser Asn Gly His Lys Gly
 85 90

<210> 141

<211> 70

<212> PRT

<213> Human papillomavirus type 24

<400> 141

Pro Leu Thr Pro Asp Ala Asp Asp Asp Pro Arg Pro Gly Lys Arg Ser
 1 5 10 15
 Lys Gly Asp Glu His Gly Pro Ala Pro Gly Arg Ala Ala Ala Pro Leu
 20 25 30

50

55

Gln Pro Pro Pro Gly Glu
65 70

<210> 142
<211> 61
<212> PRT
<213> Human papillomavirus type 15

<400> 142
Thr Thr Glu Lys Asn Leu Ala Gln Pro Pro Pro Gly Gly Arg Lys
1 5 10 15
Asp Lys Asp Lys Asp Lys Lys Thr Gln Gln Gly Asp Gln Gly Pro Pro
20 25 30
Gln Gly Gly Asp Lys Lys Ser Pro Gly Glu Gly Thr Ser Ala Asp Gly
35 40 45
Asp Asp Pro Glu Lys Pro Pro Ser Pro Pro Pro Gly Glu
50 55 60

<210> 143
<211> 60
<212> PRT
<213> Human papillomavirus type 17

<400> 143
Asp Thr Gly Gly Lys Arg Leu Ala Leu Gln Pro Pro Pro Gly Thr
1 5 10 15
Lys Asp Lys Thr Ser Asp Asp Gln Gly Pro Pro His Gly Gly Asp Lys
20 25 30
Gln Ser Pro Gly Glu Gly Ser Asp Ala Ser Gly Asp Glu Asn Ala Pro
35 40 45
Thr Pro Glu Thr Pro Gln Asp Pro Pro Thr Gly Glu
50 55 60

<210> 144
<211> 62
<212> PRT
<213> Human papillomavirus type 37

<400> 144
Glu Glu Lys His Leu Ala Leu Gln Pro Pro Pro Gly Lys Lys Asp
1 5 10 15
Lys Glu Lys Thr Pro Gln Gln Gly Asp Gln Gly Pro Pro Pro Gly Gly
20 25 30
Asn Lys Gln Pro Pro Gly Glu Gly Thr Asp Ala Asp Gly Asp Glu Asn
35 40 45

CMS0173.TXT

<210> 145
 <211> 61
 <212> PRT
 <213> Human papillomavirus type 9

<400> 145
 Pro Pro Pro Gly Arg Lys Asp Arg Asp Lys Glu Lys Glu Lys Glu Lys
 1 5 10 15
 Glu Lys Glu Lys Lys Pro Thr Thr Gly Asp Lys Gly Pro Asp Pro Arg
 20 25 30
 Val Glu Gln Lys Pro Lys Gly Glu Gly Ser Asp Gly Asp Glu Glu Gly
 35 40 45
 Pro Pro Pro Gln Thr Pro Leu Pro Pro Pro Thr Gly Glu
 50 55 60

<210> 146
 <211> 57
 <212> PRT
 <213> Human papillomavirus type 22

<400> 146
 Leu Val Leu Gln Ser Pro Pro Ser Gly Gly Lys Lys Gly Glu Arg Asp
 1 5 10 15
 Lys Asp Lys Lys Pro Gln Gln Gly Glu Glu Lys Pro Asp Gln Gly Pro
 20 25 30
 Glu Ala Pro Ser Ser Gly Glu Gly Gly Pro Pro Asp Asp Pro Ser Pro
 35 40 45
 Glu Asn Pro Gln Asn Pro Pro Gly Gly
 50 55

<210> 147
 <211> 55
 <212> PRT
 <213> Human papillomavirus type 23

<400> 147
 Lys His Leu Ala Leu Gln Pro Pro Pro Gly Gly Lys Lys Asp Lys Glu
 1 5 10 15
 Lys Lys Pro Ser Pro Gly Glu Glu Lys Pro Asp Gln Gly Pro Gly Ala
 20 25 30
 Glu Ser Asn Gly Gly Gly Gly Lys Pro Lys Asp Pro Pro Pro Glu Glu
 35 40 45
 Pro Gln Asn Pro Pro Gly Gly
 50 55

<210> 148
 <211> 62
 <212> PRT

CMS0173.TXT

Asp Thr Gly Glu Lys His Leu Ala Leu Gln Pro Pro Pro Ala Gly Lys
 1 5 10 15
 Gly Lys Asp Lys Glu Lys Pro Gln Ala Pro Lys Gly Glu Glu Lys Ala
 20 25 30
 Asp Gln Gly Pro Glu Ala Pro Thr Gly Glu Gly Gly Thr Pro Gly Asp
 35 40 45
 Pro Pro Pro Glu Asp Pro Gln Ser Pro Pro Pro Gly Glu Gly Glu
 50 55 60

<210> 149
 <211> 75
 <212> PRT
 <213> Human papillomavirus type 49

<400> 149
 Thr Leu Val Leu Gln Gln Pro Pro Thr Pro Gly Lys Arg Ser Arg Asp
 1 5 10 15
 Asp Asp Pro Gly Leu Glu Pro Gly Pro Ala Asp Gly Lys Arg Ala Pro
 20 25 30
 Gln Gly Pro Lys Lys Pro Ala Val Pro Asp Pro Asp Pro Asp Pro Leu
 35 40 45
 Pro Glu Asp Pro Glu Gly Pro Glu Asp Leu Ser Gln Pro Pro Glu Ile
 50 55 60
 Pro Ala Pro Arg Glu Pro Ala Gly Ala Glu Gly
 65 70 75

<210> 150
 <211> 52
 <212> PRT
 <213> Human papillomavirus type 4

<400> 150
 Pro Ser Arg Arg Ala Leu Leu Glu Gly Gly Asn Arg Gly Asn Pro Thr
 1 5 10 15
 Arg Pro Pro Pro Arg Pro Leu Lys Pro Arg Glu Tyr Asp Tyr Asp Glu
 20 25 30
 Asp Asp Glu Lys Glu Asn Gln Gly Pro Gly Gln Glu Lys Pro Pro Ala
 35 40 45
 Lys Glu Glu Glu
 50

<210> 151
 <211> 54
 <212> PRT
 <213> Human papillomavirus type 65

CMS0173.TXT

Leu Asn Arg Pro Pro Gln Arg Pro Pro Lys Pro Arg Gly Tyr Glu Tyr
 20 25 30

Asp Glu Asp Asp Asp Lys Glu Asn Gln Gly Pro Gly Gln Glu Arg Pro
 35 40 45

Pro Ala Lys Glu Glu Glu
 50

<210> 152

<211> 44

<212> PRT

<213> Human papillomavirus type 48

<400> 152

Leu Glu Gly Asp Arg Ala Ser Gln Lys Thr Pro Thr Pro Ser Arg Pro
 1 5 10 15

Pro Pro Arg His Pro Asp Tyr Glu Ser Asp Asp Asp Glu Asn Arg Glu
 20 25 30

Asn Leu Glu Pro Pro Thr Pro Pro His Pro Glu Asp
 35 40

<210> 153

<211> 48

<212> PRT

<213> Human papillomavirus type 50

<400> 153

Ala Asn Arg Lys Asp Leu Glu Ala Val Asn Gln Lys Pro Tyr Arg Thr
 1 5 10 15

Pro Asn His Pro Pro Arg His Gln Gln Tyr Asp Phe Asp Glu Asp Asp
 20 25 30

Glu Lys Glu Asn Thr Ile Pro Thr Asp Thr Glu Ser His Asn Gln Asn
 35 40 45

<210> 154

<211> 47

<212> PRT

<213> Human papillomavirus type 60

<400> 154

Leu Pro Thr Glu Asp Arg Pro His Lys Arg Glu Ser Leu Ala Leu Pro
 1 5 10 15

Arg Arg Arg Val Leu Phe Asp Tyr Asp Ala Glu Asp Pro Thr Ser Asn
 20 25 30

Lys Glu Asn Tyr Pro Pro Glu Ser Arg Pro Val Pro Lys Asp Ala

<212> PRT

<213> Bovine papillomavirus type 1

<400> 155

Pro Ser Leu Ser Leu Leu Cys Ser Ala Pro Pro Pro Ala Val Pro Ser
 1 5 10 15

Glu Gln Ala Ser Val Gly Tyr Glu Thr Val Leu Ala Arg Thr Pro Thr
 20 25 30

Ile Phe Leu Gln Ala Arg Gly
 35

<210> 156

<211> 39

<212> PRT

<213> Unknown

<220>

<223> Description of Unknown Organism: Non-Human Virus

<400> 156

Pro Ser Leu Ser Leu Leu Cys Ser Ala Pro Pro Pro Ala Tyr Pro Ser
 1 5 10 15

Glu Gln Ala Ser Val Gly Tyr Glu Thr Val Leu Ala Arg Thr Pro Thr
 20 25 30

Ile Phe Leu Gln Ala Arg Gly
 35

<210> 157

<211> 43

<212> PRT

<213> European elk papillomavirus

<400> 157

Pro Thr Gln Pro Thr Glu Pro Cys Leu Thr Leu Leu Leu Asp Asn Pro
 1 5 10 15

Pro Phe Val Ala Pro Ser Glu Leu Ala Lys Thr Gly Val Gly Pro Phe
 20 25 30

Thr Ala Arg Leu Pro Thr Ala His His His Pro
 35 40

<210> 158

<211> 34

<212> PRT

<213> deer papillomavirus

<400> 158

Thr Leu Leu Leu Glu Ala Thr Pro Phe Thr Val Pro Ser Glu Leu Ala
 1 5 10 15

<210> 159
 <211> 50
 <212> PRT
 <213> Bovine papillomavirus type 4

<400> 159
 Pro Asp Leu Pro Glu Thr Pro Gly Ala Gly Ser Arg Gly Arg Ser Arg
 1 5 10 15
 Leu Arg Asp Arg Asp His Gly His Asp His Asp Arg Leu Arg Arg Gly
 20 25 30
 Arg Thr Pro Val Asp Glu Thr Arg Gly Tyr Arg Val Pro Gly Asp Pro
 35 40 45
 Arg Glu
 50

<210> 160
 <211> 50
 <212> PRT
 <213> Human papillomavirus type 41

<400> 160
 Pro Gln Arg Tyr Tyr Asp Arg Arg Gly Arg Asp Asp Ala Glu Thr Arg
 1 5 10 15
 Lys Arg Gly Ser Arg Ser Pro Gln Pro Leu Ser Glu Asp Glu Glu Leu
 20 25 30
 Thr Asp Ala Asp Pro Pro Arg Arg Pro Asn Ala Gly Pro Arg Arg Arg
 35 40 45
 Leu Phe
 50

<210> 161
 <211> 47
 <212> PRT
 <213> Canine oral papillomavirus

<400> 161
 Leu Pro Pro Gly Lys Gly Arg His Gly Gly Leu Asp Gly Gly Arg Arg
 1 5 10 15
 Gly Ser Pro Glu Gly Gln Glu Asp Glu Glu Asp Ser Asp Glu Glu Glu
 20 25 30
 Ala Glu Asn Tyr Pro Pro Ser Arg Ser Arg Pro Arg Arg Gly Arg
 35 40 45

<210> 162
 <211> 34

papillomavirus

<400> 162

Gln Gly Pro Lys Pro Arg Val His Trp Ala Asp Glu Gly Gln Gly His
 1 5 10 15

Gln Gly Cys Asn Glu Gly Arg Gln Ser Asn Glu Asn Arg Pro Pro Arg
 20 25 30

Thr Lys

<210> 163

<211> 61

<212> PRT

<213> Unknown Organism

<220>

<223> Description of Unknown Organism: Rabbit Oral
 Papillomavirus

<400> 163

Leu Gln Tyr Pro Gln Ala Pro Arg Thr Ile Arg Lys Pro Arg Ser Ser
 1 5 10 15

Arg Tyr Arg Gly Arg Phe Leu Val Thr Asp Gly Gly Asp Pro Asp Pro
 20 25 30

Gln Glu Leu Asp Ser Thr Gln Gln Asp Pro Glu Asp Lys Glu Asn Ile
 35 40 45

Pro Pro Thr Ser Thr Pro Thr Pro Ser Pro Pro Thr Pro
 50 55 60

<210> 164

<211> 48

<212> PRT

<213> Human papillomavirus type 1a

<400> 164

Thr Pro Pro Ser Asn Arg Arg Pro Ser Thr Thr Pro Asn Ser Gln Asp
 1 5 10 15

Arg Gly Arg Pro Arg Arg Ser Asp Lys Asp Ser Arg Lys His Leu Tyr
 20 25 30

Ala Asp Gly Leu Thr Asp Gly Glu Asp Pro Glu Val Pro Glu Val Glu
 35 40 45

<210> 165

<211> 40

<212> PRT

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Arg Arg Leu Phe Ala Ser Asp Gly Pro Thr Asp Glu Glu Gly Pro Glu
 20 25 30

Val Pro Glu Ile Pro Pro Ser Asp
 35 40

<210> 166
 <211> 48
 <212> PRT
 <213> Mastomys natalensis

<400> 166
 Ile Pro Arg Val Ser Leu Gln Asp Lys Thr Thr Gly Gly Asn Gln Gln
 1 5 10 15

Arg Arg Arg Arg Arg Gly Glu Arg Gly Ala Arg Thr Pro Ser Pro Glu
 20 25 30

Thr Thr Ala Gln Arg Pro Lys Arg Pro Arg Arg Ala Cys Thr Arg Lys
 35 40 45

<210> 167
 <211> 15
 <212> PRT
 <213> Human papillomavirus type 16

<400> 167
 Arg Pro Ile Pro Lys Pro Ser Pro Trp Ala Pro Lys Lys His Arg
 1 5 10 15

<210> 168
 <211> 12
 <212> PRT
 <213> Human papillomavirus type 16

<400> 168
 Pro Lys Pro Ser Pro Trp Ala Pro Lys Lys His Arg
 1 5 10

<210> 169
 <211> 13
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: synthetic peptide

<400> 169
 Met Ala Asp Pro Ala Ala Ala Thr Lys Tyr Pro Leu Cys

<212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic Peptide

<400> 170
 Leu Leu Arg Gly Ala Phe Asp Tyr
 1 5

<210> 171
 <211> 11
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic Peptide

<400> 171
 Asn Ser Arg Asp Ser Ser Gly Gly Asn Ala Val
 1 5 10

<210> 172
 <211> 8
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: synthetic peptide

<400> 172
 Leu Val Gln Gly Ser Phe Asp Tyr
 1 5

<210> 173
 <211> 8
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: synthetic peptide

<400> 173
 Gln Ala Asp Ser Ser Thr His Val
 1 5

<210> 174
 <211> 72
 <212> DNA
 <213> Artificial Sequence

CMS0173.TXT

<400> 174
cctgttgatga gcctcctgtc gaannnnnnnn nnnnnnnnnn nnnnnnnnt tgagcgttta 60
ttcttgcttc cc 72

<210> 175
<211> 40
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: synthetic
oligonucleotide

<400> 175
taatacgact cactataggg agacaagaat aaacgctcaa 40

<210> 176
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: synthetic
oligonucleotide

<400> 176
gcctgttgatg agcctcctgt cgaa 24

<210> 177
<211> 90
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: synthetic
oligonucleotide, n = any random nucleotide.

<400> 177
taatacgact cactataggg agacaagaat aaacgctcaa nnnnnnnnnn nnnnnnnnnn 60
nnnnnnttcg acaggaggct cacaacaggc 90

<210> 178
<211> 73
<212> RNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: in vitro
transcription product from SEQ ID NO: 177

<400> 178
gggagacaag aaauaaacgcu caannnnnnnn nnnnnnnnnn nnnnnnnnu ucgacaggag 60
gcucacaaca ggc 73

CMS0173.TXT

<220>

<223> Description of Artificial Sequence: synthetic
peptide

<400> 179

Asp Glu Ala Asp

1